Confronting Nonsense with Common Sense:

Thoughts on Cross-Examining the "Every Exposure Counts" Plaintiffs' Expert

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I. Introduction

In most, if not all, mesothelioma cases, medical causation *vis-à-vis* product identification is a paramount issue. Typically, many defendants' products have been identified by either the plaintiff, co-workers or both. Those products have been described in numbers of ways and dust exposures from working with or around them likewise have varied. It is not uncommon to see both lengthy intense exposures to some products and intermittent minor exposures to others described in detail in the same deposition.

Faced with these varying "exposure" allegations, mesothelioma plaintiffs' attorneys strive to cast as wide a liability net as possible. From a medical causation standpoint, they do this through a sophisticated cadre of experts, primarily but not always pathologists. These experts, well recognizing that their task is to establish the liability of as many defendants as they can, rely on a similar theory – all asbestos exposures above background levels cumulatively and substantially cause mesothelioma; in other words, every exposure counts. The opinion that "each and every exposure" to asbestos contributes to cause a later-diagnosed disease is also often expressed as each and every breath of asbestos-containing air contributes, each and every inhaled asbestos fiber contributes, each and every occupational exposure to asbestos contributes, each and every "above background" or "above-ambient" exposure contributes, or there is no "safe level" of asbestos exposure. It is also referred to as the cumulative dose theory.

Examples of the theory as stated by the experts come from Dr. Eugene Mark and Dr. Richard Kradin, among others.

Dr. Mark:

Asbestos is the only established cause of diffuse malignant mesothelioma in patients in the United States who have not received prior radiology at the site of the tumor. All special exposures to asbestos which occur prior to the development of a diffuse malignant mesothelioma contribute to its pathogenesis. A special exposure as used here means an exposure for which there is scientific reason to conclude that such an exposure creates risk of developing the disease. All of the types of asbestos can cause diffuse malignant mesothelioma.

Mark Dep., Jun. 2005, Morin v. AF German Co., C.A. No. 05-4504 (Mass. Super.).

Dr. Kradin:

It is my opinion that Mr. Melford has malignant mesothelioma of the left chest. His prognosis despite radical surgery is poor. It is my opinion, to a reasonable degree of medical certainty, that his mesothelioma was caused by cumulative exposure to asbestos.

Kradin Dep., Dec. 28, 2011, Melford v. Abex Corp., C.A. No. PC11-1172 (R.I. Super.).

Although the wording may vary, the meaning does not. These experts opine that all exposures, without regard to fiber type, frequency, intensity or proximity are to be treated with equal condemnation. These opinions are subject to vigorous challenges in most jurisdictions throughout the country, with varying results. There are many surveys and studies reporting how various jurisdictions treat the admissibility of these opinions. Suffice it to say that most of us will be required to deal with these experts and their purported causation opinions in some fashion. This article seeks to provide some common sense ideas for the effective cross-exam-

ination of the experts with an eye towards both establishing a foundation for a *Daubert/Frye* challenge and undermining the validity of the theory itself.

The objectives follow this outline:

- 1. Use the Science of Mesothelioma Causation at the Cellular Level
- 2. Show That Even Applying the Theory "Correctly" Can Result In Mistakes
- 3. Reduce the Testimony to What the Experts Really Mean
- 4. Stretch the Theory to Ridiculous Conclusions
- 5. Take What You Can Get
- 6. Push if You Have an Opening

II. Mesothelioma Causation at the Cellular Level

The "every exposure counts" theory must be held up against what science has established concerning how mesothelioma is caused at the cellular level. Doing so illustrates the folly of the opinion as a matter of basic logic. A vital source of this information comes from Dr. Arnold Brody, a common plaintiffs' expert. Dr. Brody's reputation is particularly helpful with the "every exposure counts" experts. All of them will admit his qualifications and few, if any, of them will disagree with his opinions. It is important, therefore, to use his cellular causation concepts with these experts; one should have them adopt the basic scientific principles at the outset.

Dr. Brody believes and has testified that mesothelioma develops when one or slightly more than one "target" mesothelial cell(s) have been attacked by asbestos fibers. The fibers that reach these target cells damage the DNA in them, causing "insults" or "errors" that impede the cells' ability to control their growth. He has explained that there is a range of errors required, certainly more than three and probably within 15 or 16. He is unable to be more precise than that. *See* Brody Dep., Apr. 19, 2010, *Blanchard v. Am. Standard, Inc.*, C.A. No. PC 09-2432 (R.I. Super.). Importantly, Dr. Brody concedes that not all fibers inhaled reach the target cells and cause errors. In fact, he admits that which fibers in fact do so is a matter of chance. He has agreed that since some proportion of inhaled fibers reaches the target cell(s), by definition some proportion does not. *See id*.

Compare this with the "every exposure counts" theory. Logically, the two concepts do not line up and are, in fact, counterintuitive. The "every exposure counts" theory ignores Dr. Brody's basic scientific causation model. If some inhaled fibers do not reach the target cell(s), they do not cause disease. If this is true, and Dr. Brody admits that it is, then again by definition, every exposure cannot cause disease because no one can say which fibers reached the target cells and which fibers did not.

Dr. Brody is helpful in another significant way. He has testified many times that once the target cell or cells have been attacked to a sufficient degree, the disease process (metastasis) has begun and mesothelioma is inevitable. *See id.* When that has occurred, no other exposures matter and the patient will develop the disease irrespective of any future exposures.

Again, applying this logic to it, the "every exposure counts" theory fails. Although science cannot say precisely when disease inevitability happens, we do know that it happens at some point in time. As will be seen below, for example, post-metastasis exposures, deemed irrelevant by Dr. Brody, will be wrongly included as causative by the "every exposure counts" expert.

Lastly, Dr. Brody may assist with a *Daubert/Frye* challenge to the "every exposure counts" theory itself. He has testified that the theory has never been scientifically tested, is unsupported by any data, has not been published in peer-reviewed literature, is a "concept" which is "intuitive," and has not been "put together

as a scientific principle and tested." See Trial Tr., July 18, 2006, Baxter v. Alfa Laval, Inc., C.A. No.: MICV05-4314 (Mass. Super.).

III. Even Applying the Theory "Correctly" Can Result in Mistakes

The "every exposure counts" experts are typically very well qualified and savvy witnesses. They have testified hundreds of times and should not be expected to abandon their opinions. One can, however, present hypothetical exposure patterns to these experts which call the theory into question. One such example involves post-metastasis exposures.

Typically an expert, such as Dr. Jerrold Abraham, will write reports and give testimony concerning an individual who has allegedly been exposed to many different products over many years. The individual may have worked in a shipyard in the 1950s, been in construction in the 1960s, been a motor vehicle mechanic in the 1970s and been a plumber in the 1980s. Presented with this, Dr. Abraham or a like-minded expert, provided he or she confirms a mesothelioma diagnosis, will opine that all of the exposures from 1950 – 1989 contributed to cause the disease. When pressed, he will say that all of the exposures, provided they were above background, were causative.

Confronted with the inevitability of disease concept from Dr. Brody, Dr. Abraham has conceded that he and his theory can be mistaken:

- Q: So if we talk about a hypothetical worker, we've got a Joe Smith again, he starts working with asbestos-containing products in 1950, and he retires in 1980.
- A: That much I can deal with okay.
- Q: And the point where the disease he's exposed to enough asbestos and the fibers have reached the target cell and caused the insults that they need to cause so that the disease is going to become inevitable or is inevitable, happens in 1968.
- A: Well, that's what we can't determine.

(emphasis added).

- Q: I understand that. Science doesn't know that. But assume for purposes of my hypothetical that that's what happened biologically. If all of that were true, you get the case in 2010, he's diagnosed in 2009, you get the case and the lawyer sends you a letter that says his exposure started in 1950 and ended in 1980, you would include all of those exposures, provided they were above background level, as being significant contributing causes to his mesothelioma, wouldn't you?
- A: Well, you're assuming that this is a case diagnosed in 2009, so there's no way to know that it was fully committed in 1968; it could be. So I would not have be able to know that, that's how I would assume that all those exposures through 1980 contributed.
- Q: Right. That's my point. And my point is if what I just described to you were true, then it would be in error to say that post 1968 exposures caused or contributed to that fellow's mesothelioma; it would be a mistake.
- A: Assuming that hypothetical that you know so much about it, that would be correct. Abraham Dep., Oct. 13, 2010, Cashman v. Aamco Transmissions, Inc., C.A. No. 06-5839 (Mass. Super.)

Another effective method of undermining the "every exposure counts" theory is through the use of common life analogies. Presented with them, the "every exposure counts" expert may concede that his or her theory can be inaccurate by its very nature, including as causative factors (here bullets) that are not. Again, Dr. Abraham:

- Q: Going back to the whole fiber attacking cells, there's no way of knowing which fibers from which products actually accomplished that fact, correct?
- A: Well, again, using the cumulative exposure approach, they all contributed by making it more likely that that result happened.
- Q: Well, that's my point. If somebody is in a shooting gallery and 50 people shoot at him and one bullet kills him, the other 50 people or the other 49 people that shot at him were not causative of his death, correct?
- A: Well, unless you couldn't trace the bullets to see, then you could attribute it to all of them.
- Q: Well, that's just it, you can't figure it out, so you include all the shooters.
- A: That's a reasonable analogy since that's the way cumulative exposure works.

Id. (emphasis added).

IV. Reduce Testimony to What the Experts Really Mean

The "every exposure counts" experts' testimony is typically verbose and expansive. They, in essence, use a lot of language to create the impression that what they are saying makes sense and should be accepted without question. It is important to sift through the verbiage and reduce the opinion to its barest bones. Most, if not all jurisdictions require in some form or another that an exposure be a substantial contributing cause to disease. The "every exposure counts" expert either recognizes this burden or has been informed of it by counsel. Hence, when asked, he or she will say that each exposure meets that burden. One cannot stop this from happening. What one can do, however, is have the expert admit what the theory really means – the cumulative dose theory cannot exclude any exposures as causative, so it includes them all. This is significant. Including something that one cannot exclude is *not* legal causation. In Massachusetts, this has been stated as follows:

There is some risk of opinions that amount to changing the burden of proof. I have heard testimony from Dr. Mark that you cannot eliminate a particular product or exposure, and I accept and believe that as scientifically reliable. But to go from the inability to eliminate as a possible cause to an opinion that it is a substantial contributing cause, I think there's a danger that that particular opinion based on the inability to eliminate it is an impermissible opinion with respect to the law of the burden of proof and the law of what a substantial contributing cause is.

Trial Tr., Mar. 16, 2009, Watts v. Alfa Laval, Inc., C.A. No. 2007-1756 (Mass. Super.) (Healy, J.) (emphasis added).

As noted previously, the theory has been challenged many times. Recently, the United States District Court for the District of Utah, Central Division has excluded the theory, again finding fault with the inclusion of causes that cannot be excluded:

When Dr. Hammar states that he cannot rule out any asbestos exposure as a possible cause of an individual's mesothelioma he is confirming the fact that there are insufficient facts and data to establish what minimum dosage levels are required to cause cancer in a human being. The fact is the medical community at present does not know the answer to the all-important question regarding legal causation, how much is too much? Dr. Hammar seeks to base his opinion not on the thin reed that he cannot rule any exposure out, but on the opposite: he rules all exposures "in," boldly stating that Mr. Smith's mesothelioma "was caused by his total and cumulative exposure to asbestos, with all exposures and products playing a contributing role." This asks too much from

too little evidence as far as the law is concerned. It seeks to avoid not only the rules of evidence but more importantly the burden of proof.

Smith v. Ford Motor Co., No. 2:08-CV-630, 2013 WL 214378, at *2-3 (D. Utah Jan. 18, 2013) (emphasis added).

More recently, a different judge in a separate case similarly concluded that the "every exposure counts" theory, as presented by the plaintiff's experts, "is based on their lack of information sufficient to show the level of exposure which does not create a risk of mesothelioma. This is not reliable enough evidence for the Court to allow it in under the standards of *Daubert* and Rule 702." *Anderson v. Ford Motor Co.*, No. 2:06-CV-741 TS, 2013 WL 3179497, at *5 (D. Utah Jun. 24, 2013). The court added that the corpus of medical and scientific literature relied upon by the plaintiff's experts merely "shows that any exposure to asbestos *could* cause mesothelioma, but no one knows how likely that is." *Id.* at *6.

Further, even courts that have accepted the scientific validity of the "every exposure counts" argument nevertheless have emphasized that the theory, standing alone, is legally insufficient to establish proximate causation absent "a more specific showing of the 'frequency, regularity, and proximity' of such exposure." *Sweredoski v. Alfa Laval, Inc.*, C.A. No. PC 2011-1544, slip op. at 16 (R.I. Super. Jun. 13, 2013).

However, Maryland's highest court even more recently held that expert testimony espousing the "every exposure counts" theory was properly admitted because it was based on evidence of the decedent's repeated exposures to high levels of asbestos fibers. *Dixon v. Ford Motor Co.*, -- A.3d--, 2013 WL 3821431, at *7 (Md. July 25, 2013). In a measure of small comfort, the *Dixon* Court did acknowledge that "[t]hat kind of opinion, if offered in a case of truly minimal exposure to the defendant's product, may well raise concerns that would need to be tested under *Frye...*."

Accordingly, it should be a goal to have the "every exposure counts" expert admit categorically what he or she is saying. Drs. Richard Kradin and Elaine Panitz, among others, have done just that.

Dr. Kradin:

- Q: And if you have a situation where an individual is exposed to a variety of different products over a number of years, and you are given that information and that information alone, coupled with a confirmed diagnosis of malignant mesothelioma, all of the exposures that are listed are causative in your view?
- A: Yes.
- Q: What you're saying then or what I'm saying in asking you is given that information, because you are unable to exclude any of those exposures, you include all of them?
- A: Yes.

Kradin Dep., Dec. 28, 2011, Melford v. Abex Corp., C.A. No. PC11-1172 (R.I. Super.) (emphasis added).

Dr. Panitz:

- Q: We have no way of knowing which fibers caused or contributed to the disease, we have no way of excluding any of the fibers, so we include them all. Isn't that what you're telling us?
- A: I would say that as we indicated, all of the exposures in his occupational setting have to be considered as contributing to the cumulative exposure.
- Q: And they have to be considered because you can't tell which ones caused the disease and which ones didn't. Isn't that correct?
- A: That is correct. There is no way to know.
- Q: There's no way to know, so you include every single one of them?

A: But scientifically that's how we regard the exposure and the cause and effect. There is no scientific evidence to suggest which fibers in a cumulative dose lead to the malignant mesothelioma.

Panitz Dep., Oct. 29, 2009, Kelley v. Alco Auto Parts Co., C.A. No. 06-1539 (Mass. Super.) (emphasis added).

Having the experts admit that this is what they are really saying may well establish a foundation for exclusion via a *Daubert/Frye* motion prior to trial. It will at least provide ammunition for attacking the opinions at trial.

V. Stretch the Theory to Ridiculous Conclusions

The "every exposure counts" theory provides opportunities to make its proponents sound absurd. Married to the concept that each and every exposure, no matter how insignificant, contributes to disease, the expert may be forced to accept as true propositions that defy common sense. Examples include stretching the single fiber exposure to the nonsensical extreme. Dr. Abraham again:

- Q: Say you've got a fellow who's sitting in a room. The air is the air, as you've said it. He's sitting there for a half an hour. There are no respirable fibers. And a fiber fairy appears in the room and puts a 6-micron chrysotile fiber right in his breathing zone and he breathes it, which takes the exposure to above background. Is that a significant contributing factor in your view?
- A: Well, hypothetically it would be.
- Q: If that fellow who was sitting in that room let's put two of them in the room, and the same thing happens to them; one, they both develop mesothelioma and two, they're both exposed to one fiber from the fiber fairy. Okay? One of them lived in a hermetically-sealed room for his entire life and only had the exposure to that one fiber, and the other worked in a shipyard for 60 years with amosite-containing insulation and pipe covering. Under those circumstances the one fiber would still be a significant contributing factor to both of those fellows developing mesothelioma in your view. Is that correct?
- A: Well, again, I think it's highly unlikely that there would be such a patient that only had that one fiber exposure that developed a mesothelioma, but if there were I'd have to include it.

Abraham Dep., Oct. 13, 2010, Cashman v. Aamco Transmissions, Inc., C.A. No. 06-5839 (Mass. Super.) (emphasis added).

In addition to having the "every exposure counts" expert deal with exposures to a single fiber, one can work with proportions and achieve similarly silly results. Dr. Panitz:

- A: In my opinion, Mr. Kelley's malignant mesothelioma was caused by his cumulative exposures to airborne asbestos as a car mechanic over all the years that he worked as a car mechanic.
- Q: If he worked for 40 years with asbestos-containing products made by company A and he came into contact with those products 4,000 times and then he worked once with an asbestos-containing product made by manufacturer B, so you've got 4,000 exposures as compared to one exposure, that one exposure is still a substantial contributing cause?
- A: I would put it this way. Each of those occupational exposures contributes to the cumulative exposure that leads to the development of malignant mesothelioma.

Panitz Dep., Oct. 29, 2009, Kelley v. Alco Auto Parts Co., C.A. No. 06-1539 (Mass. Super.) (emphasis added).

In these examples, the conclusions drawn by the "every exposure counts" experts do not pass the smell test. The theory traps them, and one should take advantage of these opportunities.

VI. Take What You Can Get

While persistent and formidable, these experts will make some concessions. The mantra is "every exposure." If "every exposure counts," then certainly alternate exposures count and they should be developed and emphasized. Most of these experts will concede, in some form or another, that on a fiber-per-fiber basis crocidolite is the most carcinogenic, followed by amosite and chrysotile. If a plaintiff had amphibole exposures, the "every exposure counts" expert should admit that they were a more significant contributing cause. Dr. Mark:

- Q. And you'll concede, or you have conceded that on a fiber-per-fiber basis, crocidolite is the most carcinogenic asbestos fiber?
- A. Yes.
- Q. And likewise, on a fiber-for-fiber basis, chrysotile is the least carcinogenic asbestos fiber?
- A. Yes.
- Q. If the Eternit plant or the cement plants in the Chekka area, if it could be proved or if it was proved that they were using crocidolite asbestos during the time that Mr. Bouhanna was growing up in Kafr Hazir, would that be significant to you in any way?
- A. If it could be proved and if it could be indicated that he inhaled it, then that would be a contributing cause to his diffuse malignant mesothelioma.

Mark Dep., Apr. 21, 2004, Bouhanna v. 128 Imports, Inc., C.A. No. 04-3803 (Mass. Super.) (emphasis added).

Similarly, some exposures are so minimal that even some "every exposure counts" experts will discount them, especially if they are described properly. Should that happen, those exposures should be taken out of the expert's causation vernacular. Dr. Holstein:

- Q. If Mr. Dahlquist removed brakes from a 1964 Pontiac LeMans, using either a wet or a dry rag, not using an air hose, and he did it in his driveway, that would not in and of itself be a significant exposure. Is that a fair statement?
- A. I agree.
- Q. All right. You have testified before, as by way of analogy, that significant exposures can be equated to drops of water in a bucket, correct?
- A. I have used that analogy, yes.
- Q. These exposures, which we have agreed were not significant exposures, those would not qualify as drops of water in the bucket for purposes of your analogy; isn't that correct?
- A. I agree.
- O. None of them would.
- A. I agree.

Holstein Dep., Jun. 16, 2006, Dahlquist v. ADAP, Inc., C.A. No. 05-3057 (Mass. Super.) (emphasis added).

VII. Push if You Have an Opening

Not all plaintiffs' causation experts are fully on board with the "every exposure counts" theory. Some will provide broad causation opinions in reports, but when pressed will back away from them in depositions or at trial. This is uncommon, but can happen. If one senses such hesitancy, present the theory in its extreme

to the expert. If rejected (or at least not embraced), push forward, keeping in mind that inability to exclude does not equal inclusion. Dr. Malcolm Goodwin:

- Q: And you are aware that there are some pathologists who testify that each and every exposure above background contributes substantially to someone's getting mesothelioma, correct?
- A: Yeah. I think it's worse than that. I think some of them say each and every exposure and don't say anything about background.
- Q: Sure. There are some pathologists who would testify that if a person lived in a hermetically-sealed bubble his or her entire life and then was exposed to one chrysotile fiber and then later developed mesothelioma, they would attribute the mesothelioma to the one chrysotile fiber. You do not ascribe to that theory, do you, Doctor?
- A: I do not.
- Q: Having in mind all of the rest of the exposures and your experience and knowledge and education, you wouldn't attribute his the passing through the brake room that I've just described for you as a significant contributing cause of Mr. Kumiega's mesothelioma?
- A: I cannot exclude that as a possible source of significant exposure.
- Q: Okay. When you say you can't exclude it?
- A: That's the same to me as saying it might be.
- Q: Okay. Now let's work on that for a second because we're not too far apart. You "can't exclude" it and it "might" be. Okay. What I need to know is, can you testify to a reasonable degree of medical certainty that the exposure that I've described was a significant contributing cause of Mr. Kumiega's developing mesothelioma?
- A: I'd rather say that I'm not willing to do that.
- Q: Okay, I can accept that.

Goodwin Dep., Sept. 20, 2012, Kumiega v. 3M Co., C.A. No. 11-3228 (Mass. Super.) (emphasis added).

VIII. Conclusion

Cross examination of the "every exposure counts" expert is a challenge. These experts are hired to perform a crucial task, and they are good at it. Their respective Achilles' heels reside in the fundamental flaws inherent in the theory itself. Common sense examples and analogies can be particularly effective in undermining their testimony. The examples above are just that, examples, and opportunities to expand or improve on them are unlimited.

Good luck.

Endnote

A representative table of judicial opinions from varying jurisdictions ruling on the admissibility of the "every exposure counts" theory is provided in Appendix 1.

Appendix 1

- 1. **Dixon v. Ford Motor Co.**, -- A.3d--, 2013 WL 3821431 (Md. July 25, 2013) Plaintiff's expert testimony as to "every exposure counts" theory was properly admitted because it was based on evidence of decedent's repeated exposures to high levels of asbestos fibers.
- 2. Anderson v. Ford Motor Co., C.A. No. 2:06-CV-741 TS, 2013 WL 3179497 (D. Utah Jun. 24, 2013) Rule 702 and Daubert recognize above all that to be useful an expert's opinion must be based on facts and data. The every exposure theory is based on the opposite: a lack of facts and data.
- 3. **Sweredowski v. Alfa Laval, Inc.**, C.A. No. PC 2011-1544 (R.I. Super. Jun. 13, 2013) Defendant's Motion to Exclude "each and every exposure" theory denied, but for admissibility plaintiff must present some evidence of duration, proximity and intensity of exposures.
- 4. *Smith v. Ford Motor Co.*, No. 2:08-CV-630, 2013 WL 214378 (D. Utah Jan. 18, 2013) Dr. Hammar's opinion that since all exposures cannot be excluded, they all should be included avoids both rules of evidence and burden of proof.
- 5. *Moscaritolo v. A.W. Chesterton Co.*, C.A. No 10-0862 (Mass. Super. Jun. 2, 2011) Dr. Edwin Holstein precluded form offering "each and every" opinion at trial.
- 6. *In re Asbestos Litig*., No. 0001, Control # 084682, Findings, Memorandum and Order, (Pa. Ct. Com. Pl. Sept. 24, 2008) Single-fiber expert testimony of Dr. Mark did not meet admissibility requirements for scientific testimony.
- 7. *Gregg v. V-J Auto Parts, Inc.*, 943A.2d 216 (Pa. 2007) The "every single exposure" to every asbestos product is a proximate cause of a subsequently diagnosed asbestos-related disease excluded as scientifically invalid.
- 8. *Basile v. Am. Honda Motor Co., Inc.*, No. 114 CD 2005, 2007 WL 712049 (Pa. Ct. Com. Pl. Feb. 22, 2007) Theory not supported by any methodology, let alone a generally accepted one, and excluded.
- 9. *Betz v. Pneumo Abex, LLC*, 44 A.3d 27 (Pa. 2012) Plaintiff's expert's testimony in support of the "any exposure" theory was properly excluded under *Frye*.
- 10. *Borg-Warner Corp.* v. *Flores*, 232 S.W.3d 765 (Tex. 2007) Requiring some exposure "threshold."
- 11. *Georgia-Pacific Corp.* v. *Stephens*, 239 S.W.3d 304 (Tex. App. 2007) Plaintiffs' experts failed to show that "any exposure" theory is generally accepted in the scientific community.
- 12. *In re W.R. Grace & Co.*, 355 B.R. 462 (Bankr. D. Del 2006) Use of the no safe level of linear "no threshold" model for showing unreasonable risk "flies in the face" of the toxicological law of dose response.

13. *Brooks v. Stone Architecture, P.A.*, 934 So.2d 350 (Miss Ct. App. 2006) – Summary judgment granted as no rational basis demonstrated under theory for fear of future disease.